10. DATES

NEUSE LEVEE BOTANICAL/RADIOCARBON SAMPLES

Four carbon samples were collected from the Neuse Levee cultural levels. None was taken from features, but rather from the general level sediments in good context. Although all samples were small, they generally consisted of firm wood samples ranging up to 2 cm in length. They were first submitted to Andrea Shea for botanical identification (see ethnobotany discussion in Chapter 7) and then to Beta Analytic for AMS dating (see Chapter 2 for discussion of geomorphology radiocarbon dates). Most of the samples were pine, although some hickory nut was included.

All of the samples were from the lower Archaic cultural horizon (Table 10.1). Depths of the samples ranged over approximately 15 vertical centimeters as measured from the surface during collection. The dates are all virtually identical: ca. 2200±100 B.C. The temporal proximity of the dates suggests a single event such as a single occupation or an intense forest fire that burned the tap roots of pines. The presence of hickory nut in the samples suggests, that because potential food items are present, humans could have been involved in the burning as well. Since the date corresponds with the dates of Savannah River points in North Carolina, it seems likely that the dates are associated with the intensive lithic reduction activity at Neuse Levee temporally marked by Savannah River points. The dates on Savannah River points in North Carolina (Figure 10.1) trend from old in the west at Warren Wilson (3648 B.C. calibrated), the oldest date on the tradition in the East, to young at Pony Pasture (1518 B.C. calibrated).

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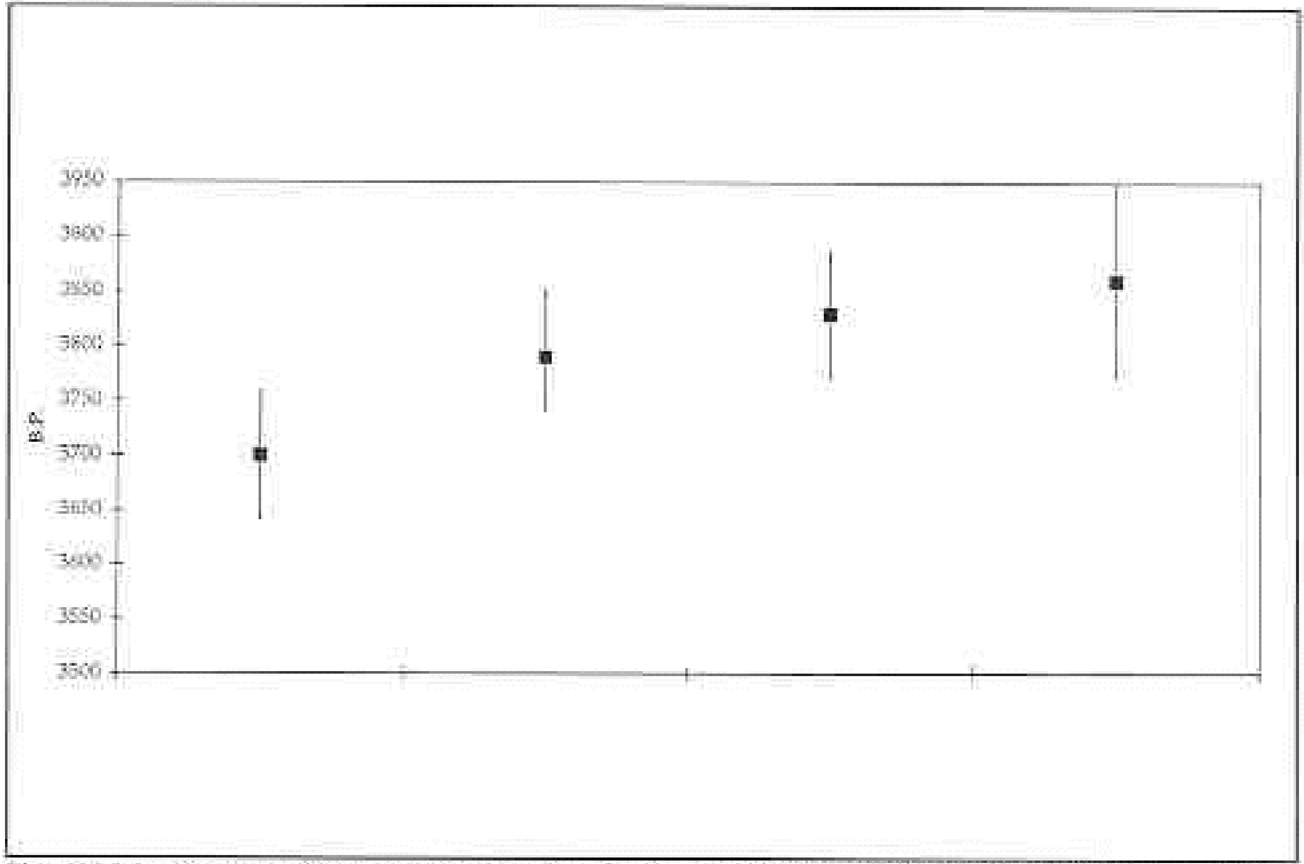

Figure 10.1. Savannah River Radiocarbon Dates in North Carolina Plotted against UTM Easting (data from Eastman 1994a, 1994b).

Table 10.1. Cultural Radiocarbon Date

Sample	Radiocarbon Age	Calibrated	Midpoint	B.P.	±	Depth
Beta-121004	3700±60 B.P.	2110–2040 B.C.	–2113	4063	60	75–79
Beta-121005	3780±50 B.P.	2190 B.C.	–2190	4140	60	70–80
Beta-121006	3830±60 B.P.	2280 B.C.	–2280	4230	60	58–68
Beta-121007	3840±90 B.P.	2290 B.C.	–2290	4240	70	80–90

OCR DATES

A series of oxidizable carbon ratio (OCR, Frink 1992, 1994) dates was run from features and soil column B. The Block B sample column OCR dates (Table 10.2) are mean residence time (MRT) dates. Mean residence time is not directly comparable to dates from a source directly attributable to an event such as a feature. They should be thought of more in terms of the development of organic content in a soil, and its in-place aging.

Table 10.2. The Block B Sample Column OCR Dates.

ACT#	East	North	Fea.	Depth	L.U.	YBP	±*	% Org Ca	pH
3321	128	89	3	80.5	1	6210	186	1.32	3.4
3317	125	109	4A	78.5	2	6615	198	1.28	4.0
3318	125	109	4B	78.5	2	6180	185	1.39	3.9
3319	126	103	5	82.5	1	6150	184	1.33	3.8
3320	123	94	6	95.5	1	5799	173	1.19	3.7
3315	128	94.65-85	Block B	4.5	4	327	MRT	4.65	4.1
3322	128	94.65-85	Block B	9.5	4	864	MRT	1.47	4.0
3304	128	94.65-85	Block B	14.5	4	1457	MRT	1.32	3.8
3323	128	94.65-85	Block B	19.5	3	1924	MRT	0.93	3.8
3316	128	94.65-85	Block B	26.5	3	2728	MRT	0.88	3.7
3306	128	94.65-85	Block B	31.5	2	3153	MRT	0.77	3.7
3305	128	94.65-85	Block B	36.5	2	3348	MRT	0.83	3.8
3307	128	94.65-85	Block B	41.5	2	3723	MRT	0.97	3.7
3308	128	94.65-85	Block B	46.5	2	3904	MRT	1.13	3.6
3312	128	94.65-85	Block B	50.5	2	4020	MRT	1.17	3.6
3309	128	94.65-85	Block B	56.5	2	4059	MRT	1.02	3.6
3313	128	94.65-85	Block B	61.5	2	4674	MRT	1.06	3.6
3311	128	94.65-85	Block B	66.5	2	5234	MRT	1.03	3.6
3324	128	94.65-85	Block B	71.5	2	3324	MRT	0.68	3.6
3314	128	94.65-85	Block B	81.5	1	6053	MRT	1.21	3.5
3310	128	94.65-85	Block B	86.5	1	7286	MRT	1.28	3.5

* mrt = mean residence time.

The MRT dates grade downward to 6053 B.P. with one exception (ACT #3324). The exception at the LU 1–2 boundary could represent some kind of disruption of the carbon decay process, such as an episode of erosion and redeposition in the level. The OCR date at the unit 1–2 contact, the top of the Bt, cross-checks reasonably well with the 7210±60 radiocarbon date in the upper part of the Bt horizon (see geomorphology dates in Chapter 2; Figure 2.2). The oldest date within lithologic unit 2, archaeological

Stratum III, is a little early for the Late Archaic time range. The remainder of the dates in LU 2 (depth 3.5–61.5) fall in the accepted range of Late Archaic. The Early Woodland begins in the 40–50 cmbs range, so if the 4059 B.P. date is meaningful, it suggests an episode of slow deposition or erosion between Late Archaic and Early Woodland that began in the Coastal Plain at about 3000 B.P. The LU 3 dates generally seem too old by about 1000 years compared to the radiocarbon and cultural dating.

OCR dates were also processed from feature fill (see Table 10.2), which should represent dates. They, however, like the other unit dates, appear to be about 1000–2000 years older than would be expected.

The radiocarbon dates vary in depth over 15 vertical cm but are all virtually the same age (Figure 10.2). It does not seem unlikely that they were the result of a forest fire. Their depth and location help to date the minimum age of the lower levels and calibrate the OCR dates. The unusual OCR date could be just an anomalous date, or it could be due to some kind of redepositional process.

Deposition rates can be inferred from the OCR dates because of their concentrated numbers and thus their high resolution down the sediment column. If date samples are taken at equally spaced intervals, then the geometric relationships of the dates to each other and to the whole of the column should have meaning relative to the rate of deposition of the sediments. For example, if the sediments are being deposited slowly over the course of a 10-cm vertical interval, then more time passes for the carbon to decay and the dates should be relatively far apart in time. In a time/depth plot (Figure 10.3) this would result in a relatively flat angle of deposition. If, on the other hand, the deposition is rapid, the angle should be steep reflecting the increased rate of deposition during the 10-cm interval. A third relationship can be expected when redeposition dominates the sedimentation environment, which would appear as dates that are out of order in the time/depth column.

In the time/depth column for Neuse Levee (see Figure 10.2), all three of these relationships occur. In Stratum I an approximately 45° angle relates all four dates (B4–B19). Through strata II and III the rate of deposition begins very rapidly (B56 to B50), then decelerates from B46 to B26. Stratum IV contrasts with the overlying stratum by having an episode of redeposition near its bottom (B71), but then a normal deposition rate in its upper levels. The deposition rate in stratum V is flattest and therefore slowest by these criteria.

If the Savannah River diagnostics are providing meaning temporal information on the time of occupation of the lower levels at Neuse Levee, on the whole neither the radiocarbon nor OCR dates are providing useful information. Ironically, the only date that appears to conform to the diagnostics is the apparently anomalous OCR date at depth=71.5 cmbs.

SUMMARY

The most interesting question relative to the dating is the origin of the radiocarbon dates that provided such a consistent set of determinations. Without knowing their exact source, and not being able to associate them with features, it is impossible to say if they were of human origin. However, the hickory nut inclusions suggest human activity as a possibility, in which case they could be the residue of the workshop activity clearly apparent in the Archaic tool assemblage. The great spread of depth of the dates argues against this unless the workshop existed for a few years during which there was rapid deposition on the levee, not an impossibility. Some of the OCR MRT dates are within reasonable bounds of the cultural and radiocarbon dates. Others appear to be too old to be taken in absolute terms. Used as a column they appear to respond to erosional disturbances and increased depositions rates as nearly as they can be cross checked in this context.

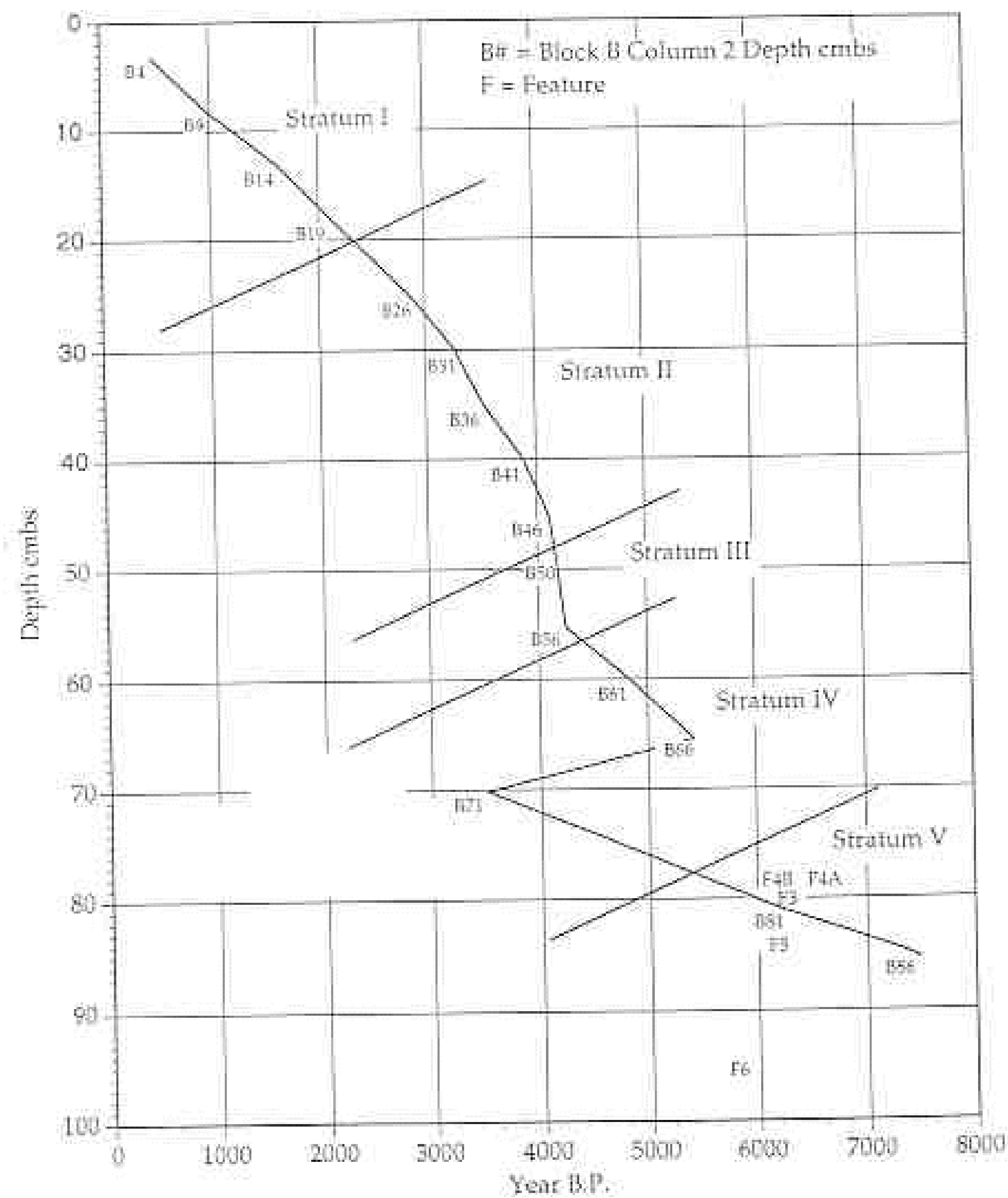

Figure 10.2. Relative Depth of Radiocarbon and OCR Dates below 55 cmbs. Correctly ordered dates should be along a trendline from upper left to lower right.

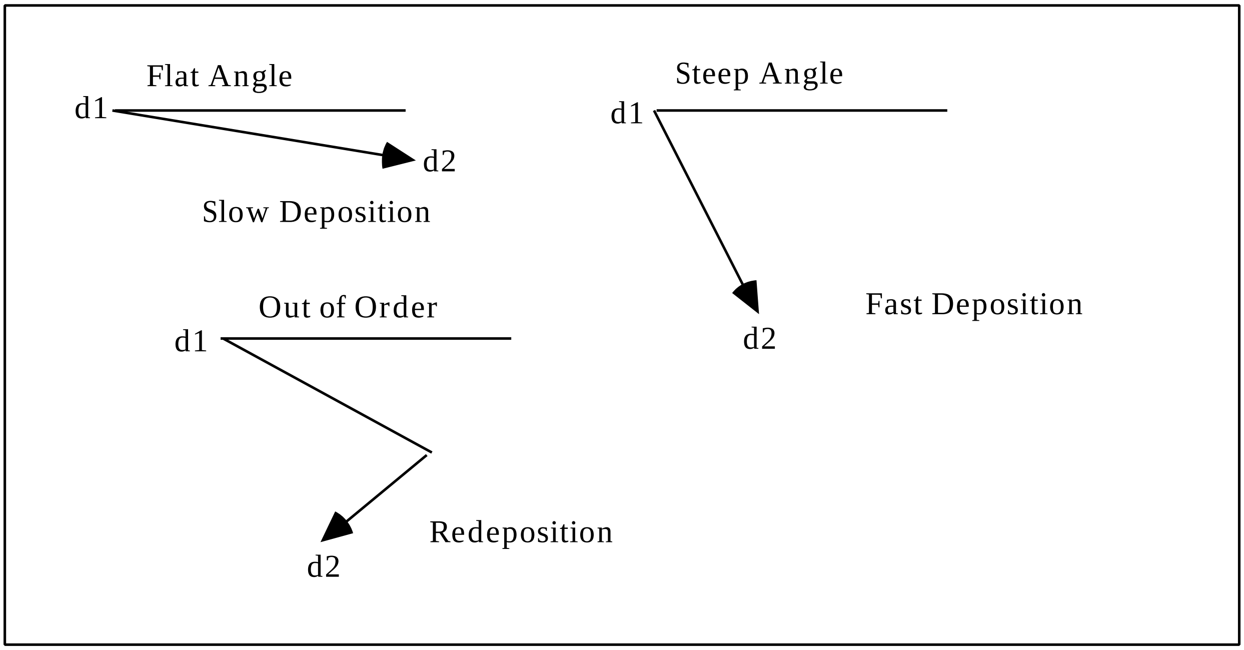

Figure 10.3. Expected Geometric Relationships between Dates at Varying Rates of Deposition.